Remarks

Claims 2-5 were canceled via Preliminary Amendment filed Sept. 21, 2004. Please amend claims 1, 7, 9-10 as shown. Claims 1 and 6-10 are pending. Support for the amendments is found in the specification as filed, for example on pages 5-6 and 10-11. Reconsideration of the application respectfully is requested.

§ 103 Rejections

Claims 1 and 6-10 are rejected under 35 USC § 103(a) as purportedly being unpatentable over U.S. Patent No. 6,335,076 (Nakamura) in view of U.S. Patent No. 6,590,070 (Toriumi). The Examiner has suggested that Nakamura teaches a thermo-adhesive sheet that is used to bond circuit board layers together. The sheet has through vias that have low melting point solder in them. The Examiner further suggests that Toriumi teaches a thermo-adhesive with a methacrylic copolymer that is useful in electronic devices. The Examiner suggests that it would have been obvious to one of ordinary skill in the art to have used a methacrylic thermo-adhesive as the adhesive of Nakumura to form a good bond with the circuit pattern because of the teaching of Toriumi. The Applicants respectfully traverse this rejection for at least the following reasons.

Claim 1, as amended, includes a thermosetting adhesive sheet composed of a thermosetting adhesive composition having a melt coating temperature of 60°C between 120°C, comprising an ethylene-glycidyl (meth)acrylate copolymer and a rosin containing a carboxyl group, having at least one through-opening region at a prescribed location with low melting point solder placed within the through-opening region and with molten bonding between the solder and the adhesive composition, wherein the temperature where the solider undergoes melted flow and the melt coating temperature are essentially the same. Applicant's claim 6 specifies that the solder has a melting point below 120°C.

Nakamura suggests a polyimide, or polyeter imide [*sic*, polyester imide], polyeter sulfone [*sic,* polyester sulfone], or epoxy resin (col. 4, lines 63-64) is used as the adhesive sheet. The exemplified polyimide adhesive sheet is bonded to the circuit board by application of heat and pressure (20 kg/cm^2, 175°C, 30 min) (see, e.g., Example 1, col. 8, lines 49-50). Then holes are bored through the adhesive sheet and they are filled with a low melting point metal powder.

Circuits are formed on each face of the circuit board by electrolytic plating and patterning (col. 5, lines 26-28). The Examiner has not shown how Nakamura describes, teaches, or suggests a thermosetting adhesive composition comprising an ethylene-glycidyl (meth)acrylate copolymer and a rosin containing a carboxyl group. The Examiner has not shown how Nakamura describes, teaches, or suggests that, when laminated, the adhesive sheet forms a molten bond with the solder as is required by claim 1. Furthermore, amended claim 1 has the temperature where the solder undergoes melted flow be substantially the same as the melt coating temperature of the thermosetting adhesive composition.

The Examiner has stated that Toriumi describes thermosetting adhesives of an ethylene-glycidyl (meth)acrylate copolymer and a rosin containing a carboxyl group and a (meth)acrylate having a carboxyl group. The adhesives can be crosslinked by electron-beam radiation to reduce the fluidity of the adhesive. The Examiner has not shown where Toriumi describes, teaches, or suggests the use of solder in vias between sheets of thermosetting adhesives in the bonding of electronic parts. The Examiner has not shown where the adhesive sheets of Toriumi would form a molten bond with solder. And the Examiner has not shown that Toriumi describes, teaches or suggests that the temperature where the solder undergoes melted flow should be substantially the same as the melt coating temperature of the thermosetting adhesive composition. Claim 9 depends upon claim 1 and thus includes all of its limitations. As such, the Examiner has not shown that, separately or in combination, Toriumi and Nakamura teach all of the limitations of Applicant's claims 1, 6, or 9. As such, the Applicant respectfully suggests that the Examiner has not met the minimum for a *prima facie* case of obviousness under 35 USC § 103(a) and the rejection should be withdrawn.

The rejection of claims 1, 6, or 9 under 35 USC § 103(a) as purportedly being unpatentable over Nakamura in view of Toriumi is unwarranted in part and overcome in part and Applicants respectfully request withdrawal of the rejections.

Claim 7 has been amended to claim molten bonding, wherein the temperature where the solder undergoes melted flow and the melt coating temperature of the adhesive composition are substantially the same. As stated above for claims 1, 6, and 9, the Examiner has not shown that Nakamura in view of Toriumi describes, teaches, or suggests molten bonding between the solder

and the thermosetting adhesive composition or that the temperature where the solder undergoes melted flow and the melt coating temperature of the adhesive composition are substantially the same. Claims 8 and 10 depend upon claim 7 with all of its limitations and as such, the rejections of claims 7, 8, and 10 under 35 USC § 103(a) as purportedly being unpatentable over Nakamura in view of Toriumi. Since the Examiner has not made a *prima facie* case of obviousness over claim 7 then the rejections of claims 7, 8, and 10 are unwarranted and Applicants respectfully request withdrawal of the rejections.

Claims 9 and 10 also have been amended to correct typographical issues.

In view of the above, it is submitted that the application is in condition for allowance. Examination and reconsideration of the application is requested. The Examiner is encouraged to contact the undersigned to answer any questions in this matter.

Respectfully submitted,

30-October-2007
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